ABSTRACT

By implementing reduction in power of common electrode voltages applied from a power source of a liquid crystal drive device to common electrode interconnects of a liquid crystal display panel, respectively, reduction in power consumption of the liquid crystal display panel as a whole is attained.

A VCOM operation waveform in a charging process from a second voltage VCOML to a first voltage VCOMH shows that a charging current Icha represents the sum of a charging current from VCOML to a reference voltage VCI, Icha1 = Cp (VCI - VCOML) / Δt, and a charging current from the reference voltage VCI to the first voltage VCOMH, Icha2 = Cp (VCOMH - VCI) / Δt. Accordingly, power consumed by Icha1 is the reference voltage VCI x Icha1, and power consumed by Icha2 is VCI x Icha2 x 2. Meanwhile, a discharging current at a time of discharging from the first voltage VCOMH to the second voltage VCOML is the sum of a discharging current from the first voltage VCOMH to the ground potential GND, Idis1 = Cp (VCOMH -GND) / Δt, and a discharging current from the ground potential GND to the second voltage VCOML, Idis2 = Cp (GND - VCOML) / Δt. Now, if converted in terms of power consumed at the reference voltage VCI, since Idis1 represents discharge to GND, power consumption thereby becomes zero. Then, consumed power due to the discharging current from the ground potential GND to the second voltage VCOML, Idis2, is VCI x Idis2.